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# IS FORESTRY JUSTIFIED?

FROM  
"A NATIONAL PLAN FOR AMERICAN FORESTRY"

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# IS FORESTRY JUSTIFIED?

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## CONTENTS

	Page
Current doubts exist.....	85
What is forestry?.....	88
The direct values of forests.....	91
Forests and forest industries are important elements in our economic structure.....	96
Forestry and agriculture.....	97
Forestry and employment.....	102
Forests and community development.....	106
Forestry and public finance.....	111
Great expansion of forestry is justified.....	114

## CURRENT DOUBTS EXIST

Many persons are viewing the forest situation in the United States with varying degrees of doubt and questioning. The total of the very considerable effort in forestry has nowhere fully solved the forest problem. Previously developed means of action and the operation of natural economic forces have not had the full beneficial effect that was anticipated. Disappointment because no ready panacea has yet been discovered, and a realization of the difficulties of the forestry job, naturally lead to questioning as to whether the job can be done, or is worth doing.

Whether wood will continue to be a basic material need; whether there is danger of producing too much of it; whether it is worth while to keep any part or all of the Nation's forest land productive; whether private owners generally can afford to retain and manage their forest lands; whether the public should help them to do this, or should rely mainly on public forestry; whether the public treasuries can find the money needed to help private owners and expand public forestry; these and many other questions are acutely in the public mind. These doubts and questionings are facts in the situation, and must be faced.

## PROBLEMS OF PRIVATE FORESTRY

Private owners of forest land have been and still are faced with mounting costs of land ownership brought about by increasing local taxation. Fire, insects, and disease continue to take or threaten to take a heavy toll of timber values. The per capita consumption of wood, and particularly of lumber, has declined and other products have cut greatly into former demands for wood. Under the existing system of unrestrained, competitive liquidation of forest values, the returns in many instances are less than the amount that was invested. It is perhaps natural, therefore, that the forest owner should view the future with grave doubts, and question whether forestry is for him.



These and other problems of private forestry and private forest lands existed before the beginning of the current depression. The depression has intensified them and forced them into the picture more prominently than ever before.

### PROBLEMS OF PUBLIC FORESTRY

Public forestry also has its discouraging problems. The need for greatly enlarged public forests, in order to protect public values and to care for lands from which private ownership is withdrawing, has in but a few places been recognized and provided for as a systematically financed public enterprise. The costs of protecting the existing public forests against fire and other damaging agents, of developing these properties with roads and trails, and of improving the forest stands by planting and cultural work, are higher than was at first estimated. Many public appropriating bodies have been unwilling or unable to finance the job. At a time when all forms of public expenditures are subjected to critical reexamination and scrutiny, the forestry task of the Nation, requiring not less but much greater expenditure of public money, may well appall by its sheer magnitude. A natural defense against the number, size, and cost of the currently suggested solutions is to question whether it is worth while to rehabilitate and manage the forests of the United States.

There are several schools of thought as to what should be done. The very diversity of the proposed public measures is in itself a source of confusion. The demand for a great increase in public forests is apparently in conflict with the theory that forest lands should remain in private ownership so that they may be taxed. In some States, insistence that public ownership of forest lands must lie in the State prevents Federal ownership and management, regardless of the need and regardless of the progress the State is able to make.

The need for either State or Federal ownership is questioned by those who believe that the problem can be solved through appropriate public assistance to private owners, or, on the other hand, through public regulation of private owners. Quite readily, diversity of proposed solutions means no actual solution. Yet it is safe to assert that if one simple formula would solve the multitude of forest problems they would already have been solved.

### CURRENT DIFFICULTIES ARE RESULT OF OUR FOREST HISTORY

The difficulties of today are in part the result of the entire history of public land laws and their administration, and of careless and unplanned practices of forest-land use. All the growing momentum of a long-continued and unplanned distribution and liquidation of American forest lands has culminated under the sudden pressure of economic distress, to produce the discouraging situation which the forest landowner and the public are now facing.

To attempt solution of the very real and pressing forest problems by assessing an exact measure of blame on some particular agency or group, or by arguing moral responsibility for improvement of the situation, seems futile. It is well to recognize clearly the steps which have led up to the problem that exists, so that past errors, now recognized, may not be perpetuated.



It is important to recognize, too, that a situation resulting from a long and complex history, and one affecting adversely local communities, local business, regions, State governments, and the Nation as a whole, besides the landowner himself, is not likely to be readily cured by a mere alleviation of the landowners' difficulties. It is not so easy as that.

#### REEXAMINATION OF NEED FOR FORESTRY IS ESSENTIAL

In pointing out the difficult and discouraging features of the current situation, there is no intent to belittle the real progress that has been made in private, State, and national forestry. A great deal has been accomplished. But that the solution has not kept up with the growth of the forest problem is evident from the very fact that so many agencies and individuals, public and private, are discussing the need for additional action. If American forest affairs were generally in healthy and satisfactory shape, there would be little discussion of them.

The difficulties and complexities of the task, and the conflicts between the evident needs of the situation and the present financial ability of the several agencies concerned, are not mentioned for the purpose of adding to the discouragement and pessimism with which various phases of the problem are viewed by different groups. These things are simply a real part of the situation. Still less is there ground for a facile optimism, which would dispose of the difficulties and needs by ignoring them.

Nothing less than a realistic recognition and reexamination of all the facts can serve a useful purpose. In the reexamination, neither pessimism nor optimism has a place. It may be found that not all the forest land is needed, and that forestry is not justified everywhere. But it does not follow from this that the area now handled under forestry practices is all that is required, or all on which the expenditures for forestry will be justified in the long run.

Were it not for the questions regarding the worthwhileness of the whole forest-conservation movement, then it would be appropriate to examine at once the present status of forestry, and to consider what additional programs may be needed. But the questions and the problems do exist. Clearly they require public understanding and public action for their solution. Whether the action takes the form of public assistance to private owners, public regulation of private owners, or public ownership in lieu of private owners, or all of these steps, is not the first question. It is rather, Is forestry justified? or, alternately, Does the Nation need forestry on the bulk or all of the forest lands? or Can the Nation afford not to have forestry generally applied?

These are not abstract questions to be debated on theoretical grounds. They are simply another way of asking, What is to be done with the 600 million or more acres of forest land of the Nation (one third of its total area) unless it is used for forestry? Has it any other profitable use? Can the Nation tolerate idleness of any considerable portion of this huge area? Which is better, productive land or idle land?

The Forest Service has no wish to base its recommendations regarding future action on beliefs that are of questionable validity.

Unless these beliefs are founded on facts, then additional programs and expenditures can hardly be justified.

## WHAT IS FORESTRY

Popular discussion of the forest situation and related matters has revealed a great deal of confusion as to just what the term "forestry" means. It is, therefore, necessary here to explain what forestry has come to be in the United States.

### PREVENTION OF DEVASTATION IS PART OF FORESTRY

Popularly it has been assumed that protection of forests against fire and other destructive agencies is forestry. It always will be essential to prevent deterioration and devastation of forests, if forests are to be grown. Neither forest land nor a factory can function without effective protection, but in both instances the protection merely makes it possible to produce useful goods. Prevention of devastation is merely an essential step to leave the way open for forestry; it is not in itself forestry.

### REFORESTATION IS PART OF FORESTRY

Tree planting is often thought of as forestry. On many millions of idle acres it is, to be sure, the immediate need if the land is to be used. In improving badly deteriorated forest, planting also has a place. The factory must be built or repaired before it can produce goods. But planting is not the whole of forestry, any more than fire control is. On the major portion of our forest area it will not be necessary because the land is already covered with trees which with proper treatment will reproduce themselves.

### SELECTIVE LOGGING IS PART OF FORESTRY

Similarly, selective logging has sometimes been held as synonymous with forestry. More specifically, it has been asserted that the cutting of only those trees which will yield the largest immediate profit is the best forestry. Forestry frequently uses selective logging as an essential tool. In many instances that form of selective logging which is best for the forest will also be most profitable for the operator. However, the production of timber is only one of the objectives of forestry. Even for timber production, the most profitable outcome in the long run may require some sacrifice of immediate profits.

### MANAGEMENT FOR WOOD PRODUCTION IS PART OF FORESTRY

The volume and value of the wood crop depend on whether there is a full or partial stand, whether more or less valuable species are grown, and how carefully the stand is protected and tended. It has sometimes been supposed that nothing less than intensive care of growing forests should be called forestry. This is an extreme view. Within the limits imposed by economic consideration in the broadest sense, intensive management is an important part of forestry and is characteristic of the best forestry. On much forest land, however, production of wood crops is a relatively minor objective. On some land the necessity of safeguarding other values may even make it contrary to the public interest to utilize the timber crop.



## MANAGEMENT FOR SUSTAINED YIELD IS PART OF FORESTRY

"Keeping the forest green" will not keep alive the communities that are dependent on forest exploitation unless the timber is cut on a sustained yield basis. The process of logging more rapidly than the forest can be regrown inevitably results in a period of waiting until a second crop is ready for cutting. If the lands are promptly restocked with young trees this period will be shorter than if they are not, but in either case industry will stop too long for the interlocked and interdependent businesses and social institutions, which were built on the basis of a boom in forest exploitation, to continue. The orderly utilization of forests, in accordance with the principle of sustained yield, is one of the major purposes of American forestry.

## MAINTENANCE OF MARKETS IS ESSENTIAL FOR FORESTRY

Stability of forest land use and of forest industries and communities requires that there be markets for forest products. From the standpoint of the private owner, forestry will be impossible unless the products can be sold at a profit. From the standpoint of the public as a forest owner, it is also desirable that forestry be self-supporting so far as may be practicable and consistent with the other objectives of management. From the standpoint of society, regardless of who owns the forests, the existence of permanent industries using timber and other products of forests, giving employment to large numbers of individuals, and contributing toward the support of Government and of local institutions, is greatly to be desired. Development through research of ways to use forest products so that they will satisfy the largest possible number of wants and the promotion of their widespread use, must occupy an important place in a program of American forestry.

## FORESTRY INVOLVES MULTIPLE-PURPOSE MANAGEMENT

### THE MULTIPLE VALUES OF FORESTS

Most forest lands possess inherently more than a single value. They produce wood and numerous byproducts (resin, tanbark, mast) for domestic and industrial use. In many instances, they also produce forage for domestic livestock. They furnish food and shelter for game animals, fur bearers, and other wild life. They protect the soil against erosion. They moderate extremes of run-off and afford protection against drying or otherwise harmful winds. They beautify the landscape and offer opportunities for healthful and inexpensive recreation to millions of our people. The best forestry takes account of all these values.

### MULTIPLE-PURPOSE MANAGEMENT OF PUBLIC FORESTS

Multiple-purpose management for the production, conservation, and utilization of timber, forage, water, wild life, and recreational values was first developed and is now found generally on the national forests.

Its object is the greatest total output of products, uses, and services. The multiple-purpose formula is exceedingly flexible, permitting changes in emphasis and type of use as conditions change and as



public necessity requires. It regards all products and services of wild lands as having a potential place in the management picture. Its basis is that the soil productiveness is to be maintained, that the dominant and subordinate uses are dictated by the character of the land, the demands for different products and the needs of dependent communities, and that the condition of land is not static but constantly changing.

#### SINGLE-PURPOSE MANAGEMENT OF PUBLIC FORESTS

Another formula for the administration of public forest lands demands exclusive attention to a single objective. This concept is exemplified by the national parks, power withdrawals, and municipal watersheds. Reservations of public lands under the single-purpose formula are generally so rigid as to prevent periodic adaptation in management as public needs develop. If the public purpose in reserving and managing wild lands is to preserve, protect, and utilize all of the natural resources that go with the land, then clearly the multiple-purpose formula is best adapted to the vast majority of wild lands. The exclusive-reservation formula has a definite place in public-land management but applies only to areas of outstanding importance or quality where one use has overwhelming dominance. The multiple-purpose formula leaves room for exclusive reservation on limited areas where actually needed.

#### MULTIPLE-PURPOSE MANAGEMENT OF PRIVATE FORESTS

The individual owning wild land usually has only one or, at the most, a few objectives. If he is a lumberman he seeks to obtain a profit in the harvesting of timber and manufacture of lumber. Other values, such as watershed protection, game management, and scenic attractiveness have little or no realizable cash value to him and attention to them may require costly alterations in his logging practices. If conflicts exist, the secondary values must be sacrificed. If no conflict exists, private management may by chance preserve all public values.

A major aim of public policy is to bring about multiple-purpose management of the private forest lands on which several values exist. The difficulties confronting the individual owner of such forest land, where he cannot reimburse himself for attention to the public values, but where the public is insistent that they be conserved, require definite recognition and attention.

#### FORESTRY IS A COMPREHENSIVE AND COORDINATED TECHNIQUE OF LAND MANAGEMENT

In summary, then, American forestry involves protection of existing forests, restoration of denuded lands by planting, perpetuation of forests by appropriate logging methods, and use of the sustained yield principle. It involves whatever efforts may be required to sustain markets for forest products. A definite aim is also to manage forest lands for values other than timber. Forestry is a coordinated technique, with many purposes and methods. These purposes cannot be attained through accident or through unplanned action. Only conscious, deliberate, and planned forestry can get the highest



values from forest lands. Forestry is land and resource management in the widest sense.

## THE DIRECT VALUES OF FORESTS

### FORESTS AS A SOURCE OF WOOD

#### WOOD FOR HOME CONSUMPTION

As a source of essential raw materials forests have played a vital part in our national history. An abundant and cheap supply of forest products was available in the initial settlement of the country, and American civilization early became characterized by a very high rate of wood consumption. The per capita use of wood and the total volume used annually have declined in the past 25 years, but the United States still uses more wood per capita than many other nations.

A decline in per capita consumption was to be expected, once the rapid expansion of the pioneer period was past. That this expectation has been realized does not mean that an abundant supply of forest products is no longer necessary. In spite of all the substitution of other materials for wood, it remains an important construction material, dominates the box and container market, and is irreplaceable in meeting the increasing use of newsprint and heavy wrapping paper. No satisfactory substitute has been found for many other uses of wood. The forms in which wood is used have changed rapidly, and they are still changing. But careful studies of the future requirements for wood, as discussed elsewhere in this report, indicate its permanently important position among our physical needs.

The decline in consumption of wood has been due in part to the comparative inertia of the producers and manufacturers of wood products. Unlike producers of many other materials, including some which are used extensively in place of wood, they have failed to compete aggressively in adapting wood to consumers' needs and preferences, in developing new uses, and in popularizing wood as a raw material. While producers of competing materials have been spending millions in scientific and technical research for the purpose of improving their products and finding new ways to use them, wood producers, with the exception of pulp and paper manufacturers, have spent relatively little.

Nevertheless, even though other materials might conceivably be substituted for wood in virtually all of its important uses, it would be contrary to the public interest for this to happen. From the public standpoint there are many advantages in having a variety of materials capable of meeting our needs. It is particularly desirable that wood be available in abundance and be employed liberally, not only because of its great intrinsic merits, but also because of its relative cheapness. Unlike most of the competing materials, it is renewable, and it can be grown in most parts of the country fairly near the consumers. It is, consequently, less susceptible of monopolistic or quasi-monopolistic control. The continued utilization of wood on a large scale is in the public interest because it makes possible the productive use of land which otherwise would produce little or nothing, and thus contributes to the economic welfare of large numbers of people, of many communities, and of the country as a whole.



Provided efforts comparable to those in behalf of many other materials are exerted to make wood serviceable and to educate consumers in its use, the demand for wood may even increase. Such efforts will be futile, however, unless provision is also made for meeting the demand with continuous dependable supplies at reasonable cost. We have sufficient forest land to meet an increased demand, providing it were all well stocked with growing timber and carefully managed. The stock of growing timber, however, is already so depleted that no amount of careful management within the next 60 or 80 years will enable even the present output to be maintained, let alone increased. Moreover, the process of depletion is still going on.

It is clearly the soundest public policy to fill the manifold needs for wood, as far as possible, with our own native products. Economic self-sufficiency, in this sense, has characterized the Nation's history. Except for relatively small quantities of special tropical woods and forest products, we have been able to supply our own requirements in peace and war. Wood is employed for thousands of specific uses, for many of which particular kinds or grades are essential, and for many more of which substitution of other materials is impracticable. Particularly in time of war an undue dependence on other nations for wood products would place us at a serious disadvantage.

Heretofore the great variety of our native woods, and their technical adaptability to most of our wood needs, have not only been a great economic asset, but have accustomed us to assuming a continuation of supplies. Already, however, many special kinds and grades are becoming scarce and costly. Requirements for many of these can be met by importation, but at added cost, and by losing the advantages of manufacture within our own borders.

#### WOOD FOR EXPORT

Many of our native woods possess technical qualities and uses which fit them for export to other countries. One of the principal reasons why this country has enjoyed a favorable position in international trade has been the wide variety of its products. The greater the number of different products, the more numerous are the opportunities for profitable trade, and the smaller is the dependence on a single article. In agriculture, manufacturing, or commerce, the single product farmer, factory, or nation is quickly and often adversely affected by fluctuations in demand for the single product.

With diversified products, there is less likelihood that all will be out of demand at a given moment. The manifold kinds of wood and wooden articles that are suitable for export are thus an important balancing factor in helping to maintain the foreign business of the Nation. It is, therefore, worth while to maintain and perpetuate the native woods, wholly aside from the desirability of economic self-sufficiency.

#### FORESTS AND CONSERVATION OF WATER AND SOIL

During the pioneer period forests were valued mainly as a source of wood. As long as the mountain sides and the river bluffs and the headwaters of the rivers were clothed with dense forests, the beneficial effects of forest cover in regulating stream flow and preventing soil erosion did not become strikingly evident.



But toward the end of the last century, as wholesale and heedless deforestation spread over more and more of the headwaters of streams used for navigation and for irrigation and domestic water, the accumulating evidence of direct observation forced recognition of the importance of forests in protecting many watersheds. The act of Congress of 1897 which made "maintaining favorable conditions of water flow" one of the two purposes of the administration of national forests did not, of course, undertake to establish by legislative enactment a scientific law of universal applicability. It did take into cognizance a relationship between forest cover, erosion and run-off, proven in numerous instances both at home and abroad. It recognized that America is not immune to the disasters which have followed deforestation of watersheds in other countries. The act of 1911 which made protection of headwaters of navigable streams the basis for purchase of national forest areas in the eastern United States, gave further formal recognition of the watershed protection value of forests.

Specific data bearing on this function of forest cover are given elsewhere in this report. Research and observation by trained men show that in many of the forest regions deforestation starts processes of flashy run-off and erosion which affect adversely water supplies and navigation. In late years impressive evidence has accumulated showing the prevalence of erosion on once forested hill and bluff lands which have been heavily grazed or used for agriculture. Destruction of the fertility and usability of the lands through sheet and gully erosion has already removed many millions of acres from agricultural use, and is in fact one of the chief reasons for the widespread abandonment of this class of land. Dumping of sand and silt into the streams has created problems of diking, overflow, and destruction of navigability far from the source of the eroded material.

Maintenance of forest cover to protect watersheds is not necessary on every part of every watershed. But estimates given elsewhere in this report show that there is a very large area of land which must be kept under forest or restored to forests if the watersheds of the country are to be kept in good condition. Lands producing commercial timber are not the only source of concern. In the West, particularly, large areas covered with inferior tree growth or brush have high value for protection of water and soil. Like the commercial forest lands, their protective value is quickly impaired by fire and overgrazing.

#### FORESTS AS A SOURCE OF RECREATION

The pioneer had little interest in the forest as an environment for recreation. Variously he hunted in it, used it as a source of wood, or struggled to annihilate it. As part of his normal environment, he necessarily accepted it. And his opportunities for recreation were few.

Later, as urbanization proceeded and wealth and leisure increased, more and more people acquired the means and the desire to leave their normal environment of the city, for at least part of each year. Along with journeys to foreign lands and to the seashore, the forests in many parts of the country acquired a recognized value for outdoor recreation of a primitive and simple sort. The Maine woods, the White Mountains, the Adirondacks, the Colorado Rockies, and the Sierra Nevadas became noted for their recreational values and attractiveness.



Until the large-scale production of low-priced automobiles and the accompanying increase in good roads reached full swing during the past 15 to 20 years, recreation in forest areas was beyond the attainment of millions of people. But this situation has now changed radically. Even the less spectacular and beautiful forest areas are heavily used by the rising tide of recreationists. Outdoor recreation in the forests has become an established part of the American standard of living. It is highly desirable as an aid to social, economic, and individual health, and fullness of life. It will certainly continue on at least the present scale.

Many of the most spectacular and heavily used forest recreation areas have been set aside under public ownership for the exclusive purpose of recreation. The national parks, State parks, and county and municipal parks in many States, have sought to furnish the answer to the mounting demand. But in terms of actual present day use, it is doubtful if these special recreational reservations take care of as many people as do the vast areas outside of parks—ordinary forest country, which possesses no outstanding scenic or inspirational features.

This phenomenon of widespread use of the ordinary run of forested country arises from several basic facts. One of the most important of these is that for the vast majority of people the enjoyment of forest recreation depends on availability within a relatively short distance, and on cheapness. The individual with ample means and leisure may, depending on his taste, climb in the High Sierra or the Canadian Rockies, hunt the moose in Maine or the bighorn in Idaho, fish for salmon in Alaska or the steelhead in the Klamath, or enjoy the scenic and inspirational values of the national parks. He is able to pick and choose and to enjoy the highest quality of the outdoor sport of his preference.

Most people, on the contrary, having both limited time and money, must take what is close or nothing. If forest country is within 100 miles of home, it will be used, even though the highest mountain is only a low hill, the largest game a rabbit or a squirrel, the biggest fish a fingerling trout, and the finest view one that could be duplicated in any wooded region. The most heavily used recreation areas are those closest and most readily accessible to the largest number of people.

Another reason for the heavy use of nonpark areas is the variety of outdoor recreation which they offer in contrast to park areas, which are limited by their very nature and purpose to a few forms. It is a cardinal principle of park management that all forms of hunting are prohibited. This is necessarily so because the purpose of parks is to preserve and protect. But many people pick hunting as the highest form of personal enjoyment in outdoor recreation. The outstanding features of parks tend to be concentrated, and the people visiting them are necessarily concentrated also. Crowding is inevitable, camping loses the quality of freedom and isolation, policing of the crowds cannot be avoided, and restrictions are numerous. The greater freedom and lack of supervision which are possible when crowds can spread out in the large areas of ordinary forest country appeal to many people in a very fundamental way.

Thus very large areas of American forest lands have acquired a high recreational use and value, simply because they are readily



accessible and are forest lands. It has become increasingly evident that recreational uses of many kinds can go on alongside of other uses of forest lands, such as conservative lumbering and grazing. Recreational uses such as hunting, fishing, camping, and climbing do not require the exclusive devotion of the land to a single purpose. As on the national forests, recreation on most lands can be simply one of the products of multiple-purpose management.

The use of forests as recreation grounds seems certain to be greatly stimulated by the increasing leisure which will result from the general trend toward a shorter working week. Because nearness and ready availability to centers of population are essential if the socially desirable outdoor recreation habit is to continue, the widest possible distribution of forest areas is clearly in the national interest. The trend of recreational development is strongly in the direction of providing the simpler and less expensive forms of recreation, such as picnicking, camping, fishing, and hunting. When recreation is handled as a byproduct of forest production or watershed protection, the cost to the public is naturally less than if furnished in a public park. Later sections of this report will discuss in detail the forest areas needed for recreation.

#### FORESTS AND WILD LIFE

The forest is the natural habitat of many species of fur bearers and upland game, including game birds and many of the finest big-game animals. An overwhelming majority of the hunting for big-game animals and upland birds is in the forest areas. The deer is by all odds the most important big-game animal, if for no other reason than its relative abundance and wide distribution. It is typically a forest species. Even where heavily hunted, it maintains itself or increases, provided it receives any sort of reasonable protection under the game laws, and provided that its forest habitat is not destroyed. Other game species and fur bearers as well can maintain themselves only if their natural habitat of woodland is maintained.

A very large proportion of the inland fishing waters are affected by the treatment of the forest land. Erosion, following deforestation, generally results in muddy streams which afford an unfavorable habitat for most game fish. Denuded watersheds commonly give rise to intermittent flow of streams, with a tendency to reach such low levels of flow that only a portion of the normal fish population can be supported. Removal of the forest shade results in a rise in water temperature which is deleterious to trout and other important species of game fish.

Hunting and fishing, like other forms of outdoor recreation, are available to the great majority of people only if the hunting and fishing grounds are accessible within a short distance and at low cost. To serve this public end is a major function of forests.

#### FORESTS AS LIVESTOCK RANGES

In many parts of the West, with relatively small areas of crop land, the mainstay of agriculture is the production of meat, hides, and wool. The forest ranges carry the flocks and herds for part or most of the year, and the crop land produces hay and grain to carry them during the winter. The 83 million acres of national-forest-



range land are essential in the agriculture of many western areas. The forest range is notably important also in large areas of the southern pine region, where the characteristically open growth of timber allows an undergrowth of nutritious grasses. In these and other regions the forage from forest ranges is a vital part of the agricultural economy. Without it, the opportunity for successful farming would be materially reduced.

The forage crop on many forest ranges has been depleted in quantity and deteriorated in quality through persistent overgrazing. Unrestricted and excessive grazing in many places has damaged or destroyed the small trees and seedlings and thus prevented reproduction of the forest. By destroying the protective ground cover and trampling the soil it has led to serious erosion and gullying. Under a properly regulated system of grazing these things would not have happened, for it is entirely possible with careful management to utilize the forage crop without harm to the forest values. On millions of acres of western ranges, the carrying capacity had been reduced greatly before the national forests were established and a system of range control inaugurated. Since then these ranges have been greatly improved as a result of systematic management.

If properly handled, the forests of the West and other regions can continue to furnish range for large numbers of domestic livestock, while at the same time they are producing timber, protecting watersheds, and furnishing opportunities for recreation.

## FORESTS AND FOREST INDUSTRIES ARE IMPORTANT ELEMENTS IN OUR ECONOMIC STRUCTURE

Nearly one third of the country's land area, or approximately 600 million acres, is forest land of one sort or another. This is a greater area than all of the United States east of the Mississippi River. It is half again as large as all of our crop land. In 32 States the area of forest land exceeds the combined areas of crop land and plowable pasture, and in 23 of these it is from twice to more than twenty times as great.

The value of our forests and primary forest industries has been estimated at something over 10 billion dollars. The gross value of products averaged close to 2 billion dollars a year just prior to 1929. During the last 100 years the value at the mill of sawed lumber alone has aggregated between 30 and 35 billion dollars, and the value of all products was certainly not less than 50 billions.

In 1929 the forest and woodworking industries employed directly 1,300,000 workers, or about 2½ percent of the gainfully employed persons in the United States. The building industries, which to a considerable extent depend upon forest products in one form or another, gave employment to more than 2,500,000 persons. In each of 20 States more than 30,000 workers were employed directly by the forest and woodworking industries (including pulp and paper manufacture). The number employed exceeded 50,000 in 10 of these, including such widely separated States as New York, Washington, Michigan, Illinois, and North Carolina. In Washington and Oregon 135,000 persons, or one eighth of all those gainfully employed, were engaged in this group of industries.

Imports of forest products, including paper, amounted to more than \$400,000,000 in 1929, or nearly one tenth of all our imports.



This was only partially balanced by exports, valued at approximately \$250,000,000.

Forest products make up about 8 percent of all the revenue freight carried by our railroads, and the supplies, equipment and other materials used by the forest industries account for a large additional tonnage. In recent years the railroads have required 80 to 90 million ties a year to keep up their tracks, and have paid around \$120,000,000 a year for these and other timber.

Some \$45,000,000 a year is paid for the timber used to mine our coal and other minerals, not including the large quantities used in the oil fields. It would be superfluous here to dwell at any length upon the importance of the rôle that wood and wooden products play in the construction and furnishing of our homes and farm buildings, as raw material for our newspapers, books and magazines, and in countless other articles used in our daily living.

Practically all of the streams used for municipal water supply, power or irrigation have their sources and considerable portions of their catchment basins in forest lands. Millions of our people look to the forests, or to forests and the associated rivers and lakes, for the health and enjoyment obtained from outdoor recreation. If it were not for their forest cover, many of our hills and mountain sides would become barren, rocky wastes and their soil covering would bury the farm lands in the valleys or would fill the reservoirs and irrigation ditches or clog the navigable channels below.

## FORESTRY AND AGRICULTURE

The perpetuation of forests is of particularly vital concern to the agricultural industry. These two major forms of land use, once regarded as competitive, are no longer so. Instead, with the advance of forest depletion and the gradual retreat of agriculture from the poorer lands it is coming to be realized that the two uses are complementary and to a considerable degree interdependent.

### AGRICULTURE IS A HEAVY CONSUMER OF FOREST PRODUCTS

Directly or indirectly, the rural population has always used the lion's share of our forest products. In the settlement of the forested regions, the timber furnished a ready-to-hand material for building and fencing and fuel which required little or no cash outlay. The phenomenally rapid settlement of our great treeless central region would have been much slower had there not been a readily available and reasonably cheap timber supply in the Lake States. In most parts of the country, farm dwellings and barns and other buildings are still built largely of wood and their continued use requires wood for repairs and upkeep. In spite of the growing use of steel and cement, the bulk of fencing still requires wooden posts. Wooden boxes, barrels and crates are used in enormous quantities for the shipment of farm products. Tool handles, farm wagons, and many sorts of farm equipment are made of wood. In common with other citizens, farmers consume wood in the form of paper, furniture and a multitude of wooden products. Millions of farmers still depend chiefly or wholly upon wood for fuel.

In 1924, not only did several million farms produce timber and fuelwood for their own use, but more than 1,200,000 farmers pur-



chased lumber, posts, firewood, etc., at an aggregate cost of \$167,000,000. The actual cash outlay for these materials was more than three fourths of the expenditure for fertilizers reported by 2,200,000 farmers. An adequate supply of a variety of forest products at low cost is vitally essential for the agricultural prosperity of most parts of the country.

#### AGRICULTURE IN MANY REGIONS DEPENDS ON ADEQUATE SUPPLY OF WATER

Besides their function as suppliers of raw materials, forests in many regions, particularly in the West, serve agriculture through their influence on water supplies. Without dependable supplies of water it would be impossible successfully to cultivate the 19 million acres of irrigated land. In the 11 Western States more than 240,000 farms, or almost half of the total number, depend on irrigation water. Approximately 17,500,000 acres are irrigated in these States. The total value of these irrigated farms in 1930 was \$4,500,000,000 and more than \$900,000,000 has been invested in the irrigation works. A large proportion of the water used in irrigation originates on forest land. Without the forest cover, the flow of water would become less regular, larger and more costly storage reservoirs would be necessary, and great expense would be entailed in removing silt from the reservoirs and ditches and, in many instances, in rebuilding dams.

#### FORESTS PROTECT FARMS AGAINST DAMAGE FROM EROSION

Another way in which forests serve agriculture is by holding in place the soil on slopes and along the banks of streams. Many thousands of acres of rich agricultural bottom-land, in the East as well as in the West, have been ruined by the deposition of silt, sand, gravel and boulders which were washed down from the hillsides after the forests were destroyed. Hundreds of thousands of acres have been cut to pieces by deep gullies which could have been prevented by preserving the forest cover at the critical points. The influence of forests in relation to water supplies and erosion is discussed in detail elsewhere in this report.

#### FORESTS FURNISH SUPPLEMENTARY INCOME TO FARMERS

Combined agriculture and forest work afford a livelihood to hundreds of thousands of farmers who would find it difficult to make a living from farming alone. This is particularly true in localities where the land suitable for cultivation constitutes a relatively small proportion of the total area or is of low productivity. These conditions are common throughout the inhabited hill and mountain regions, and also in the more level, sandy portions of the Lake States and the Southeast. The forests enable the farmers to employ themselves and their teams and other equipment profitably during the winter or other seasons when farm work is slack. They may either work in their own woods, getting out timber for home use or for sale, or they may work for wages in logging camps or mills. In 1929, forest products to the value of \$240,000,000 were cut from 2,500,000 farms. From one third to one half of this sum represents cash income for materials sold. In 1919, forest products worth \$394,000,000, of which \$217,000,000 worth were sold, were cut from 1,800,000 farms.



In many instances forest work or the sale of forest products provides a major portion of the farm income. This has been particularly true during the early stages of settlement, while the farms were being cleared. In the northern portion of the Lake States, for example, more than 50 percent of the settlers' income during the first four years has come from sale of timber products and work off the farm; even after 20 years, more than one fourth of the total income was derived from these sources.<sup>1</sup> Dependence upon income from the forest or other sources than the farm itself is not confined to newly settled regions, however. It is found also in long-settled portions of the Appalachian Mountains, the Ozarks, and the Northeast. Out of 2,222 operated farms in two counties of central West Virginia in 1928, only 768 gave exclusive employment to the operators. The operators of the remaining 1,454 farms engaged in other work, much of it in the woods or forest industries, for a considerable portion of the year.<sup>2</sup> In the Kentucky mountains, as in similar regions where the population is relatively dense and all of the land suitable for the purpose has long been utilized for crops and pasture, the maintenance of satisfactory living standards requires a larger income than can be obtained from farming alone. The large area of forest land, if properly utilized and supplemented by local manufacture of the forest products, offers the best prospect of furnishing supplementary employment.<sup>3</sup>

In many European countries the forests play an exceedingly important role in the farm economy. Not only do millions of farmers own little tracts of woodland, as in France, Germany, Austria, Finland, and the Scandinavian countries, but large numbers of them find part-time employment in the public forests or those belonging to other large owners.

An excellent example of the way in which forestry and farming can be coordinated is the small holdings project that is being developed by the Forestry Commission of Great Britain. Under this scheme, the better quality land on the tracts acquired for State forests is reserved for agricultural use. This land is then divided into small holdings, averaging about 10 acres, which are equipped with buildings and leased to settlers. Each of these small holders is guaranteed 150 days of forest work a year; the rest of the time he works on his holding, raising food for his own use and for sale. In this way the Forestry Commission obtains a dependable supply of resident workers for reforestation, development and eventual utilization of the State forests. At the same time hundreds of workers and their families are settling on farms and thus gradually repopulating the countryside in the neighborhood of the forests.

#### FOREST INDUSTRIES AFFORD LOCAL MARKETS FOR FARM CROPS

Permanent forests also help agriculture through the markets for farm products which are afforded by the nonfarm population that is dependent upon forest work or work in wood-using industries. The logging camps and the industrial villages require large quantities of vegetables, fruits, meats, and dairy and poultry products, as well as

<sup>1</sup> Hartman, William A., and John D. Black. *Economic Aspects of Land Settlement in the Cut-Over Region of the Great Lakes States*. U.S. Dept. Agric. Circular 160. 86 p., illus. 1931.

<sup>2</sup> Peck, Millard, Bernard Frank, and Paul A. Eke. *Economic Utilization of Marginal Lands in Nicholas and Webster Counties, W. Va.* U.S. Dept. Agric. Tech. Bull. 303. 64 p., illus. 1932.

<sup>3</sup> Clayton, C. F., and W. D. Nicholls. *Land Utilization in Laurel County, Ky.* U.S. Dept. Agric. Tech. Bull. 289. 109 p., illus. 1932.



hay and grain where horses or mules are used in logging. Local farmers can frequently sell directly to the consumers, thus avoiding most of the costs of transportation and marketing, and can thereby receive much better prices than if they had to ship their produce out to more distant markets.

Forest industries create a market for more than the food products of the farms. They also enable the farmers to dispose of their woodland products much more readily and at better prices than would be possible if there were no wood-using industries in the vicinity. For instance, farmers within trucking distance of a pulp mill or a woodenware factory can usually sell timber to much better advantage than those farmers whose only nearby market is for firewood.

#### FORESTS HELP TO LIGHTEN THE FARM TAX BURDEN

Under the prevailing system of financing local government chiefly by the taxation of property, it is obvious that productive forests and wood-using industries help to support roads, schools and other governmental functions. It is equally obvious that when the forests are destroyed and the dependent industries close down or move away they no longer pay taxes. Unless costs can be correspondingly curtailed, which is seldom the case, their share of the public revenues must then be paid by the remaining property, or must be met by contributions from taxpayers in other parts of the State. Unless the land formerly occupied by forest can be promptly converted into farms—and this can no longer be done in any forest region of the United States—the burden on existing farm and village property is bound to increase. This has been the unpleasant experience of farmers in many cut-over land regions.

#### FARM ABANDONMENT FOLLOWS FOREST DESTRUCTION

In many regions where agricultural settlement was directly associated with the utilization of the forests, the exhaustion of the timber and withdrawal of the industries has worked great hardship. The lack of opportunities for supplementary work, the loss of local markets for farm produce, the dismantling of railroads following cessation of the timber traffic, and the increased burden of taxation with a narrowing of the tax base, have made it impossible for many settlers to continue. Widespread abandonment of farms and virtual depopulation have followed, even in localities where permanent agricultural utilization of part of the land would be economically justified.

#### FORESTRY ON SUBMARGINAL LANDS PREVENTS UNECONOMIC USE FOR AGRICULTURE

There are, of course, many millions of acres which it is possible to cultivate, but which should never be farmed. Yet, as long as cut-over land remains in private ownership, whether in farms or outside of farms, there will be an urge to use it for crops or pasture. These are the only forms of use which most landowners are able to envision. Much inferior land (from the agricultural standpoint) has been more or less temporarily added to the agricultural area for this reason. Its continued operation can only result in disappointment and eventual failure of the settlers. It also means a loss to the community at



large, because of the expense of providing the necessary schools, roads, and other services.

Steps should be taken to prevent further expansion of farming on such land. Definite assignment of the land to forest growing, either through its acquisition by the public, or by private owners with the cooperation of the public, will tend to remove the incentive to put it to uneconomic agricultural use. This is a very important reason, which is generally overlooked, for the development of productive forests on the large areas of land which is submarginal for agriculture but physically capable of cultivation.

#### FORESTRY HELPS TO MAINTAIN POPULATION IN SUBMARGINAL REGIONS

We hear much, nowadays, about agricultural overproduction and the need for getting submarginal land out of agricultural use. It is sometimes suggested that the rural inhabitants of the more or less marginal regions should migrate to better agricultural land elsewhere or to industrial centers where they can engage in other kinds of work. This would not materially affect agricultural overproduction—probably not at all, so far as the general market is concerned. A few of the persons thus migrating might better their condition, but many of them would be even worse off than before. Whether migration were allowed to take its natural course or were stimulated, it would seldom result in complete depopulation. The process would probably be selective, leaving behind those individuals with the least initiative or economically the weakest, and thus would give rise to rural slums which might be even more difficult to deal with than those in the cities.

Instead of getting the people of such regions to seek employment elsewhere, it would be far better to bring employment to them. By establishing industries which will supplement agriculture, an even larger population than exists now can be supported on a much higher level than at present. Agriculture may be submarginal so far as the general market is concerned, but may still be supermarginal if its products can be utilized in the same locality where grown. This is particularly true in localities where farming can be conducted on a part-time basis, and where a portion of the farmers' income can be derived from other industries.

Just as in the case of nations, the people of a given region can purchase the products of other regions only if they produce commodities or services which can be sold in outside markets. As a general rule, submarginal agricultural regions cannot economically, nor should they attempt to raise farm products for the general market. The forest products of such regions, however, in many instances are eminently suitable for trade with the outside. The cost of living will generally be lower in decentralized, forest-farm communities than in the larger industrial centers, and long hauls and various intermediate costs between the forest and the factory can be eliminated. For these reasons, wood products industries in such communities can compete on a favorable footing with similar industries in the larger centers. The more completely the timber can be manufactured into finished commodities within the region of origin, so much the better will the forest resource serve to support



the local population and increase its ability to buy the products of other regions.

## FORESTRY AND EMPLOYMENT

### EMPLOYMENT IN FOREST INDUSTRIES IS DECREASING

Forestry and the lumber industry directly employed an average of 650,000 workers in the United States in 1929. This did not include the large amount of part-time work by 2,500,000 farmers who got out wood and timber from their own land and worked it up for their own use or hauled it to market. Another 650,000 were employed in wood-working plants of various sorts and in the pulp and paper industry. The persons employed in the transportation and merchandising of lumber and other forest products are not included in the above figures.

Employment in the forest and related industries has been decreasing for more than 20 years. So far, this has been due only in small part to increased output per man. The principal reason is the decrease in total output. For instance, the number of wage earners employed in what the Bureau of Census classifies as "the principal lumber industries" decreased 23 percent between 1909 and 1929, while the output of sawed lumber decreased 17 percent. In 1899 the ratio of total lumber cut to number of wage earners in logging camps and sawmills was 85,000 board feet per man. In 1909 the ratio fell to 81,000 feet, and in 1919 to 72,000. In 1929 it rose to 88,000 feet. It is quite possible that the future will see considerable technological advance in the processes of harvesting and fabricating wood products, and that this will tend to reduce the quantity of labor per unit of output.

### FORESTRY WILL HELP TO STABILIZE EMPLOYMENT

To the extent that this takes place, and to the extent that a decreased output represents a reduction in our capacity to consume timber products or to sell them abroad, a corresponding reduction in employment must be expected. However, if we can eliminate the wastes involved in the present system of forest exploitation and migratory industries, there is reason to believe that it will be possible to reduce costs and in the long run materially to increase the consumption and export of timber products. If this should come about, the forest industries might require an even larger number of workers than are employed now.

Whether or not total employment should increase, there are manifest advantages in stability of employment in the various timber regions. Permanently productive forests will not only give fairly steady work in protecting and caring for the forest and harvesting the crop, but they will also lead to the establishment in the same vicinity of wood-using industries which will also employ many workers. Although they may not contribute greatly toward relieving permanent technological unemployment in the urbanized industrial regions, they will be very helpful in taking up the slack in the immediate regions where they are located.



EMPLOYMENT OPPORTUNITIES UNDER SUSTAINED YIELD  
FORESTRY

## IN EUROPE

For European countries, where many forests have been under sustained yield management for a long time, there is considerable information on employment in forestry and forest industries.

In Denmark, 750,000 acres of forest furnished employment in 1912 equivalent to full-time work for about 6,000 persons, or one worker to 125 acres. The actual number employed was considerably greater, because much of the work was seasonal, part-time work. Few, even of the regular forest workers, are employed in forest work for more than 200 days a year. During the remaining time most of them work on farms.

In Sweden, employment averages about 1 man to 400 acres in the south and 1 man to 1,400 acres in the less productive forests of the north.

In 1927 the State forests of Prussia gave work to 143,600 men and women. For the majority of these the forest work was supplementary to agricultural or other employment, for the men worked an average of only 98 days and the women 29 days. The total was equivalent to about 33,000 year-long employees for the 5,500,000 acres of forest, or 1 to 167 acres. By 1930 the ratio of employment was reduced to 194 acres per person. This includes logging, but not work in saw-mills or other manufacturing industries. For all of Germany, with 31,000,000 acres of forest, from 1,500,000 to more than 2,000,000 persons are employed part or full time in forestry, logging and wood-using industries.

In Austria about 1 person for every 100 acres of forest is engaged in forest work and if transportation, manufacture and wood-working industries are included, 1 for every 30 acres.

For Czechoslovakia, including the industries, there is 1 worker for every 35 to 50 acres.

In Alsace-Lorraine, not including transportation and mill workers, about 25,000 persons, mostly farmers, find part-time employment in forestry and logging. This is equivalent to 1 full-time worker for 225 acres of forest.

In Switzerland, the 1,700,000 acres of public forests give work to nearly 10,000 full-time and about 30,000 part-time employees, equivalent to perhaps 1 full-time worker for 100 acres.

The figures for England are interesting because they show the increase in amount of employment as forests develop from the planting stage to full production. The Thetford Forest is almost entirely a planting project so far. When the area was taken over, about 6 gamekeepers were employed on the entire 26,500 acres. Since planting began the number of employees has averaged between 200 and 300, including both full-time and part-time workers. The Forest of Dean, which contains some mature timber but is not yet fully stocked, gives work to 381 men in forest and sawmill on less than 20,000 acres. When the forest is fully productive it is estimated that there will be work for about 700. The Tintern Forest, which has been under management for 30 years and is well stocked, gives work at the rate of 1 full-time employee to 35 acres. This includes silvicultural work,



felling and extraction, and a certain amount of rough manufacture. The British Forestry Commission estimates that on the average, forests in the planting stage require 1 full-time worker for 100 acres and forests in the productive stage, 1 worker to 50 acres. Including hauling and woodworking, fully productive forests give work to 1 person for every 25 acres.<sup>4</sup>

The wide variation in the above figures is not surprising. Not only is there great variation in the productiveness of the forests of different regions, but the amount of work involved in timber growing and utilization also varies widely with the kind of timber that is grown, and with the kinds of products that are made from it.

#### IN THE UNITED STATES

There is little information in this country to indicate how many persons might be employed in developing and managing sustained yield forests and utilizing their products. The Harvard Forest of 2,100 acres in Massachusetts, which has been under management for 25 years, employs 5 men all of the time and about 10 others for seasonal work, or roughly one full-time employee for 250 acres. This includes work in the woods and sawmill. In Maine, the Bates College Forest of 11,300 acres employs 5 year-long men and about 35 others for periods of 2 to 6 months in forestry and logging, or at the rate of one full-time man to 600 acres. This figure does not include sawing or further manufacture of the lumber. The number of employees will probably increase as the output of timber increases. A wood-working industry which has been operating in the same locality in northern Vermont for more than 80 years employs about 200 persons in harvesting and manufacturing the timber from about 8,000 acres, or at the rate of one worker to 40 acres. A southern company which is practically on a sustained yield basis cuts about 12,000 board feet a day of second-growth timber. About 100 persons are employed during most of the year. This is roughly at the rate of one worker to 120 acres. The State Forester of Connecticut has estimated that 500 men could be profitably employed for 6 months every year on the 63,000 acres of State forest. This is equivalent to one year-long man for every 250 acres.

A very rough estimate of the aggregate possibilities for employment in American forests may be derived as follows: In 1929 there were employed in forestry, logging, and wood manufacture an average of 1,300,000 persons. Including the part-time work of farmers, the total was equivalent to possibly 1,500,000 full-time workers. The total cut of timber (not including small trees cut for firewood, etc.) was approximately 54 billion board feet, or 36,000 board feet for each person engaged in the industries. Our forest land, averaging poor and good sites together, can probably grow timber at the rate of 100 to 150 board feet or more per acre per annum. At the present rate of employment this would give full-time work to one man for every 240 to 360 acres. Inasmuch as the present employment includes very little silvicultural work, and since a considerable amount of work in connection with the utilization of range and recreational resources is not included in the above figure, it is possible that our forests when fully

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<sup>4</sup> H. A. Pritchard. *Labour in Relation to Forestry in Great Britain*. Papers presented at Third British Empire Forestry Conference, Australia and New Zealand, 1928. pp. 589-600. 1928.



productive may give direct employment to at least one person for every 250 acres, or the equivalent of full-time work for some 2,000,000 persons in all.

### FORESTS AS A SOURCE OF EMERGENCY EMPLOYMENT

Much has been said regarding the possibilities of forest work as a means of relieving unemployment during periods of economic depression. Such work has been used to good advantage in several States, notably California, Connecticut, New Hampshire, Massachusetts, Wisconsin, and New York during the last year or two. It has possibilities of great expansion.

It also has its limitations, particularly after forests are on a sustained yield basis. Most of the work incidental to protection, management, and exploitation must then be done currently and in fairly even volume. Planting cannot be expanded quickly to meet emergencies, because the planting stock has to be grown in nurseries for 1, 2, or 3 years or even longer before it is ready to set out. It is impossible to raise surplus planting stock in advance and hold it in reserve until needed, because it is impractical to use trees more than 3 or 4 years old. Fire protection work depends largely upon seasonal conditions. Slash disposal, where necessary, must be done soon after the timber is cut, hence is governed largely by the rate of cutting. Thinnings and improvement cuttings in properly regulated forests cannot be postponed indefinitely until a depression happens along, but must follow a fairly regular schedule. The rate of timber cutting in general is bound to be curtailed, not expanded, during depression periods, thus releasing large numbers of woods and mill workers. In Germany, unemployment in the forest and woodworking industries at the present time is worse than in most of the other industries.<sup>5</sup> As for the technical foresters, not only has the state forest personnel been reduced, but it is reported that more than 2,000 foresters in private employment have lost their jobs.

However, our forests in their present unregulated and undeveloped condition do offer opportunities for a large amount of emergency employment. There is great need for permanent improvements such as roads, trails, telephone lines, firebreaks, recreation facilities, lookout towers, and the elimination of fire hazards, such as standing dead snags and accumulated slash. In many localities there is urgent need for check dams, terracing, and forest planting to check erosion. Most of our forests are in need of improvement cuttings to remove defective, diseased, or otherwise undesirable trees and thus increase the yields of better quality timber. Much can be done to clear up breeding places for insect pests and tree diseases. Forest planting on a much larger scale than hitherto will be needed, even after the depression is over, hence it would be possible now to employ many men in establishing nurseries and preparing planting sites.

According to a recent survey by the American Tree Association, the National and State forests could, if funds were made available, give work to at least 70,000 men for a year, or to a much larger number for shorter periods. This estimate is believed to be extremely conservative. According to later estimates, a much greater number

<sup>5</sup> Lemmel. Die Wirtschaftsergebnisse des Preussischen Staatsforstverwaltung im Jahre 1930. Mitteilungen aus Forstwirtschaft und Forstwissenschaft 3:15-95. 1932.



could be employed. It is also estimated that about three times as much work could advantageously be done in privately owned forests.

Work of the character outlined is peculiarly suitable for times of depression when consumers' buying power is insufficient to absorb the products of industry. The increase in buying power resulting from such employment will not be immediately offset by the production of other goods which must be sold, as would be the case with artificially stimulated factory employment. Instead, the money spent in forest development work will go largely for wages and consumers' goods, and consumption of farm and factory products will be stimulated.

As noted above, a depression is apt to hit the forest industries as hard as any group of industries, even when forestry is on a permanent basis. Emergency employment in forest development is especially well adapted to give work to persons who have temporarily lost their jobs in the lumber and allied industries in the same locality. It will help workers to maintain their homes and to have reasonably steady occupation, and will prevent their drifting away and aggravating unemployment elsewhere. This is particularly desirable in regions where forestry and agriculture are closely interdependent. A combined forest and farm economy is more nearly depression-proof than an urban factory-mercantile economy, because the rural workers can to a considerable extent subsist by consuming their own and each other's products, even if there is no outside market for them. Unless the workers in the cities can sell their products or their services, they will have to be fed by the community or they will quickly starve.

## FORESTS AND COMMUNITY DEVELOPMENT

### BOOMS AND THEIR CONSEQUENCES

The "boom" phenomenon which follows too rapid exploitation and liquidation of natural resources follows a more or less generalized pattern. A boom centering around lumbering begins with the first logging operation in a virgin-timber area. Plant and equipment are quickly installed far beyond the sustained yield capacity of the tributary forests. Other logging operations and sawmills follow the first, and production gathers momentum as it goes. At the start, the new demand for goods and services commonly exceeds the supply. Local business which is in on the ground floor prospers and expands. The vacuum is rapidly filled by influx of new enterprises. Established agricultural and business enterprises adjusted to the demands prevailing before the boom reinvest their earnings in expansion of plant capacity. For a time all goes well, but sooner or later the boom collapses and these fundamentally sound enterprises necessarily face serious loss of capital.

In the history of booms—whether in mining, stock raising, lumbering, or recreation—few local governmental agencies have had the wisdom or the restraint to hold public expenditures in check. As the boom gets under way and as local agriculture and business prosper and expand, increases in taxes are accepted complacently by the taxpayers. Every community desires intensely to outdo some neighboring community in the excellence of its public buildings and its roads. As the income from taxes mounts, and without calculating the cost to complete, a program of public improvements is launched. Almost



without exception, the original estimates of costs are far below the actual, and the final outcome is that bonds have to be issued to complete public projects that have been undertaken. Communities under the spell of optimism and local pride cheerfully vote bonds that their governing bodies say are needed. When the peak of the boom is passed, property values decline, and the burden of local taxation begins to bear heavily on the primary raw material industry and local citizens alike.

At this time taxpayer's leagues begin to form and endeavors are made to reduce public expenditures. Usually this is difficult, because of the unyielding nature of the fixed charges for maintenance of buildings and roads and for interest and amortization of bonds. Failing in this, county authorities plead for National and State subsidies. Ordinarily these are obtained, on the plea that collapse of local government's credit and default on bonds must be prevented.

This boom process of too rapid exploitation reacts in a broadly similar way on the individual lumber business. Each new operation that starts contributes toward overproduction. Usually two processes then come into operation. First, the major producers in the region attempt to work out some plan of price stabilization or production control. These attempts have invariably failed. Then the individual concern must begin to analyze production costs and attempt economies which will reduce the unit cost of lumber. These economies can be effected principally through increasing production so as to spread the fixed costs over a larger output. Increase in production frequently means increases in plant and equipment. Thus earnings are reinvested and become frozen assets. As operation after operation follows this formula, overproduction becomes progressively more serious, prices are further depressed, and net return is reduced. Savings in production costs are more than wiped out by decreases in selling price.

Somewhere in this phase of the cycle the local government begins the practice of assessing a fixed amount of taxes against an annually decreasing volume of stumpage. This still further accentuates the urge for quick liquidation and reduces the chance for the individual operator to come out even. More commonly than not, the latter phases of the cycle are a scramble to cut as rapidly as possible and to sell at any price. In the wake of depressed markets, credit becomes restricted and the need for cash forces still further lowering of prices. With the end of an operation it is often found that earnings have been largely reinvested and that the total capital investment has not been retired.

#### COMMUNITY DECADENCE FOLLOWS FOREST DESTRUCTION

Decline of lumbering is soon followed by decadence of agriculture in the region, and this in turn increases the difficulties for those who endeavor to hang on. The ultimate result is tax delinquency, land abandonment, or finally virtual depopulation of the region, with its train of economic and social wastage. The northern portion of the lower peninsula of Michigan may be taken as an illustration. For many years, while lumbering was flourishing, population steadily increased, homes were built, villages and cities grew up, a network of railroads spread over the region, and thousands of settlers established themselves on farms. Little thought was given to perpetuation of



the forests, for it was believed that the region would develop as had the country farther south and that forests and forest industries would no longer be needed.

After a few decades logging and subsequent fires had wiped out all but a few remnants of the forests. The sawmills and logging camps which employed many thousands of men in 1889, employed only a few hundred in 1929. The railroads, no longer having timber to haul or anything to take its place, pulled out many of the branch lines and left the settlers without adequate transportation facilities. Costs of building and maintaining roads mounted, as did costs of schools and other public services. Real-estate values declined. Taxes were increased. The more prosperous portions of the State were called upon more and more to help support schools and highways. Farmers, no longer able to earn wages in winter work in woods or mills, with no local market for their produce, and burdened with rising taxes, found that they could no longer make a living and gradually drifted away. Between 1910 and 1930 the number of farms in the cut-over northern counties of lower Michigan decreased by more than 12,000, or 27 percent.

When the camps and mills ceased to operate, many villages and towns lost their principal or only industries and no longer had any reason for existence. Population fell off rapidly. Many mill villages that had had a population of several hundreds or even thousands joined the swelling list of "ghost" towns. One of the most striking instances is the twin towns of Au Sable-Oscoda, on the shore of Lake Huron. In 1890 these towns had a combined population of 8,346, with fine buildings, paved sidewalks, and all the conveniences of an enterprising small city. During the sawing season the population was much larger. In 1930 the combined population was only 903, of whom 61 lived in Au Sable city, which had 4,328 inhabitants 40 years before.

Of 31 counties in this region, 29 had fewer inhabitants in 1930 than in 1910 and 24 had fewer than in 1900. The region as a whole lost 83,000 people between 1910 and 1930, or 21 percent. During the same period the southern agricultural and industrial counties (not including Wayne) gained 765,000 inhabitants, or 50 percent, and Wayne County alone (Detroit and vicinity) gained 1,357,000, or 256 percent.

This state of affairs is not peculiar to Michigan. The same thing has happened in the other Lake States, in the Appalachian region, in the South, and already in some localities in the far West.

This entire boom cycle, starting with untouched virgin-timber areas and ending with local impoverishment and parasitism, has varied in length in different regions. But in the main the life of the cycle seldom lasts more than 25 to 40 years. It is disastrous alike to the lumbering business and to local communities, local government, and local business. To prevent booms, with their inevitable consequences of local impoverishment, overproduction, and migratory lumbering is one of the obligations of American forestry.

#### PERMANENT FORESTS SUPPORT PERMANENT COMMUNITIES

One of the most important contributions that continuously productive forests can make toward the general welfare is through the stabilization of centers or nuclei around which various economic and social institutions can group themselves. In these centers the workers



in the forest industries can live with their families in their own homes instead of living in camps. They can be responsible citizens instead of the homeless, voteless men with little sense of civic responsibility who so often make up our transitory, "boom" logging camps and sawmill towns. Under these conditions villages or small cities can grow up, their size depending on the magnitude and variety of forest industries.

Such communities will furnish markets for nearby farmers and social and economic opportunities for them and their children and will tend to halt emigration to distant cities. The churches, schools, hospitals, public libraries, stores, places of entertainment, and other institutions which are provided in these centers and the contacts with persons of various occupations and points of view serve to widen the mental horizons and social opportunities not only of the villagers but also of the more scattered population in surrounding territory.

Without the industry centers, such institutions and services could not exist, or only on an exceedingly inadequate scale. Where the sawmills and industries are transient in character, as has so generally been the case in this country, the community nuclei are little better than camps, and the community services are not provided or they pass away with the cutting out of the tributary forests. Under such circumstances the social ill effects are greater than if the communities had never existed, because settlers are left stranded who would never have come into the region if they had not expected that permanent social institutions would be provided.

#### EXAMPLES OF PERMANENT FOREST-INDUSTRY COMMUNITIES

An excellent example of a community, or rather a group of communities dependent upon forest industry, is Grays Harbor County, in western Washington.<sup>6</sup> This county, with a population of 60,000, including several modern cities, is almost entirely dependent on the forest resources. In 1928 it had 52 lumber and shingle mills and 19 other enterprises manufacturing wood products. These, together with logging camps, employed over 10,000 persons. Millions of dollars have been spent by local interests and by the Federal Government in developing the harbor and port facilities for the shipment of lumber. There were 1,892 business firms in the county engaged in all sorts of enterprises. There were only 22,000 acres of crop and pasture land in 1928 out of a total area of 1,196,000 acres, but there were 956,000 acres of logged-off land. The total assessed valuation of the county in 1928 was close to \$38,000,000, of which more than one half represented forest land, timber, and woodworking plants. Probably 90 percent or more of the other values would be wiped out if the lumber industry should cease. Obviously, the disintegration of such a group of communities or of others like these elsewhere would entail great economic loss, not only to those directly involved, but to the State and Nation as well. Fortunately, in this instance this has been realized before the forest was entirely exhausted, and plans for insuring a perpetual timber supply are being discussed.

Another example, in another part of the country, is the city of Bogalusa, in Louisiana, which has a population of more than 14,000

<sup>6</sup> Cooperative forest study of the Grays Harbor area (Washington). By various authors. 79 p. Published by Western Forestry and Conservation Association and Charles Lathrop Pack. (Portland, Oreg.) 1929.



and is entirely dependent on forest-products industries. The 28 factories employ 4,400 men and ship close to 16,000 carloads of products a year. This is a city of fine homes, churches, schools, parks, playgrounds, and up-to-date business establishments. Starting as a lumber town, industries have gradually become diversified, and they now include pulp and paper, naval stores, woodenware, and furniture, but all of them are still based on the forest. The company controlling the principal industries has definitely embarked on a policy of growing timber sufficient to keep the mills supplied, so that this town, unlike so many other lumber industry towns, bids fair to be permanent.

A third example is the city of Cloquet, in Minnesota. Predominantly a sawmill town for almost a half century, its end appeared to be approaching, owing to depletion of the tributary saw timber, when it was practically annihilated by a conflagration in 1918. However, unlike the cities of Au Sable and Oscoda referred to above, which were similarly destroyed in 1911, Cloquet was rebuilt. Diversified wood-using industries were established to utilize material that the sawmills could not use, and efforts were made to perpetuate the timber supply. As a result, the city now has a population of approximately 7,000, or almost the same as before the fire. Besides sawmills, it has industries which make paper, balsam wool, boxes, toothpicks, refrigerators, clothespins, and various wood specialties. It has practically no industries except those based on the forest, and as only about 20 percent of the county's area is cultivated or improved pasture, Cloquet's future is inseparably linked with the future of the northern Minnesota forests.

#### LOCAL SUSTAINED YIELD IS ESSENTIAL FOR PERMANENT COMMUNITIES

These communities, though larger than many, are typical of the sort of communities that can be supported by permanently productive forests. No one will question the desirability, from every point of view, of a permanent existence for communities such as these. It is upon the thousands of comparatively small communities scattered throughout the country that the political and economic stability and social well-being of America depend. Neither these communities nor the larger metropolitan centers whose manufactures and commerce are based upon the products and resources of a prosperous, productive hinterland can continue to exist unless there is a continuous output of products from the land.

For one fourth of our land area this means a continuous output of forest products. It means more than merely maintaining a forest cover and insuring a crop of timber at some indefinite future date. As has been well said: "From the standpoint of timber supply alone it may be of little or no importance whether a continuous yield is maintained within the radius of a township, a county, a State, or even a major region of the whole country. With the consumer it makes no difference about the radius within which the annual cut is maintained. With the forest worker, however, it makes all the difference in the world."<sup>7</sup> If our forests are to do their part in maintaining permanent, prosperous communities, they must be handled in

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<sup>7</sup> Benton McKaye. Employment and natural resources. 144 p. U.S. Dept. of Labor. 1919.



such a way that a continuous supply of timber is assured for each dependent community; that is, under the principle of sustained yield by comparatively small economic units. In this way unhealthy "boom" development can be avoided, periodic overproduction of lumber and other forest products can be prevented, all of the indirect benefits from the forests can be retained and increased, and our forests can take their place permanently as one of the basic natural resources upon which regional and national prosperity is founded.

## FORESTRY AND PUBLIC FINANCE

The preceding discussion has shown that forestry serves the public interest in many ways. There would be little question as to the desirability of maintaining productive forests if they did not cost anything. But it is obvious that large expenditures will be required if our forests are to be protected and made fully productive. Hence it is natural that the questions arise: Will forestry pay? Can individual forest owners or the public afford forestry? Will not the cost, a large portion of which must be borne by the public, involve too heavy a strain on public treasuries and on individual taxpayers?

It can be admitted at the outset that forestry will not always, under all circumstances, show a cash profit to the owner, whether he be an individual or the public. There are large areas of forest land upon which forestry will not be profitable, unless in the remote future, particularly from the standpoint of the individual owner. This will be true of much of the less accessible land and land of relatively low productive capacity. It may also be true of the better land where the forest is so badly wrecked that a costly process of rehabilitation and a long period of waiting will be necessary before appreciable returns can be realized. Even for private owners, however, the opportunities for profitable forestry are much better than is commonly supposed. This is discussed in the section of this report entitled "Status and Opportunities of Private Forestry."

### PUBLIC GETS RETURNS NOT AVAILABLE TO INDIVIDUALS

From the public standpoint, the prospect of direct financial profit from forestry does not have the same importance as with private owners.

Owners of forest land can obtain income from sale of wood and other tree products, grazing privileges, and recreational and occupancy privileges. Usually these are the only salable products as far as the private owner is concerned. If the landowner is also an operating lumberman, the profit he may make in the manufacture and sale of lumber is an operating profit, not a land-owning profit. He could make the same profit if he bought stumpage from another rather than from himself. Operating profit should not be confused with profits from landownership, though the two are commonly combined in one individual or corporation.

No matter whether land is in public or private ownership, the public receives indirect financial returns and other benefits that are not available to individual owners. Within suitable limits, therefore, the public is justified in spending money, both on public forests and to promote forestry on private lands, even where no direct return can be foreseen.



## PRODUCTIVE FORESTS WIDEN THE TAX BASE

It is obvious that under the general property tax system there will be more property to tax with productive forests than with idle land, and that this will tend to result in lower tax burdens on all property within the same taxing unit. This additional property will include not merely the forests themselves, if they are privately owned, but also the sawmills, pulp and paper mills, and other plants dependent on the forest for raw material. It will include the homes and other property of persons employed in the forest-products industries, and the homes and businesses of persons who serve the forest-industry population. It will include the summer homes, resorts, and other recreation facilities that exist because of the forest. It will include the farms and villages whose existence depends on the forest. In the West it may include immense agricultural values that depend on the water from forest lands. These dependent values may, and often do, considerably exceed the values of the forests themselves.

In Wisconsin, for instance, the value of the pulp and paper plants is around \$100,000,000. The wood for these plants could be supplied by about 2 million acres of managed forest which at present valuations would probably be worth not more than \$50,000,000. In Grays Harbor County, Wash., forests and cut-over land are assessed at around \$12,000,000 and lumber and woodworking plants at nearly \$8,000,000. Of the remaining property, assessed at \$18,000,000, at least 90 percent owes its value to the existence of the forest industries. Even the farms, now worth \$1,000,000, would lose much of their value if the forest industries should close down permanently.

In cases like these, even if the forests themselves were entirely exempt from taxation they would indirectly return much greater revenues to the public treasury than would the same area of idle land. The same thing would be true if taxes were based partly or wholly upon incomes, instead of property. All of the varied industries and businesses sustained by productive forests are capable of yielding incomes, but idle land produces none.

Public acquisition of privately owned forest land is sometimes objected to on the ground that its removal from the tax rolls will reduce the public revenues. This might be a valid argument against public ownership if private owners could and would use the land in such a productive manner as to derive an income much larger than public agencies might derive from managing the same land. This will seldom be the case. In the long run, the tax collected by the public must be somewhat less than the net income from the land, or else private owners will not continue to hold it. With public ownership the public gets the entire net income.

Even where there is no direct income from a forest, the public may still derive a large indirect income. An extreme example is the Angeles National Forest in southern California. This forest is maintained primarily for watershed protection and not for timber production. It returns very little direct income, hence impairment of its protective value would not directly affect the income to the public treasury. However, the possibility of agricultural use of some 200,000 acres of exceedingly valuable land depends on the water from the Angeles Forest. It has been estimated that the Federal Government alone derives approximately \$200,000 a year from taxes on in-



comes produced by these lands. The incomes from property taxes received by local governments are many times this figure.

This is an excellent example of a case where private forestry would not pay, but where public forestry produces indirect returns many times as large as the costs to the public.

#### PRODUCTIVE FORESTS REDUCE PER CAPITA COSTS OF PUBLIC FUNCTIONS

Another way in which productive forests benefit the public as a whole and large numbers of individuals, but only in a small degree the owners of the land itself, is a corollary of the preceding.

The per capita cost of various local public functions, such as schools, local government, and highway maintenance will to a certain extent vary inversely with the population served. For instance, the cost of maintaining a school for 20 pupils is not appreciably greater than for 3. It has been found in Wisconsin that rural schools with 5 pupils or less cost twice as much per pupil as schools with 10 pupils, and six times as much as schools with 25 pupils. A mile of road serving many settlers costs no more to construct and maintain than a mile serving a single isolated farmer. Costs of town and county officers, maintenance of a courthouse, jail, and public records, etc., are about the same whether the population is sparsely scattered or dense. Where, as in many instances, permanent forest industries can result in a settled population 2 to 3 times as great as would be supported by agriculture alone, each individual's or family's share in government costs is correspondingly reduced, or better service is rendered, or both.

#### WITH PRODUCTIVE FORESTS, LOCAL UNITS NEED LESS STATE AID

Conversely, the cost of supporting schools and other public services which have been established during a boom period of forest exploitation becomes exceedingly burdensome to the remaining taxpayers after the tax base has been narrowed by depletion of the forests and passing of the forest industries. This has happened in hundreds, if not thousands, of communities in every forest region of the United States. In many instances this situation has necessitated an extension of State aid to the financially weak communities, and has thus increased the tax burdens of other communities than those directly concerned.

One example is the State of Michigan, where almost every county in the cut-over region receives more money from the State school fund alone than it pays in State taxes. Besides this, the State contributes large sums for the construction and maintenance of roads. Similar conditions occur in numerous other States. The only way in which such financially dependent counties can become self-supporting—short of complete depopulation or breakdown of essential governmental responsibilities—is by eliminating uneconomic expenditures through more systematic land use and distribution of population so as to avoid unnecessary expenditures for schools and roads, and by increasing taxable wealth or sources of revenue through productive utilization of natural resources, particularly forest land. Unless these things are done, the States can look forward to a steady increase in contributions toward the costs of local government.



## GREAT EXPANSION OF FORESTRY IS JUSTIFIED

To the question "Is forestry justified?" a general answer "yes" is indicated. This answer necessarily anticipates conclusions, based on detailed factual material which is contained in other sections of this report.

## FORESTS A NATURAL RESOURCE OF MANIFOLD VALUES AND SERVICES

It has been shown that forests furnish a variety of useful raw materials which serve as the basis for important industries as well as for export and which can be reproduced indefinitely. They furnish useful employment and a means of subsistence to millions of our citizens. They protect the soil on river banks, hillsides, and mountain slopes. They retard or prevent the silting up of navigable channels, harbors, and reservoirs. They help to maintain the purity of domestic water supplies. They furnish forage for domestic livestock, and food and refuge for many forms of wild life that are useful to man or that afford him enjoyment. They beautify the landscape, and afford opportunities for inexpensive and wholesome recreation to many millions of people. They are an important adjunct of agriculture, which could hardly exist in many regions were it not for the forests. Under permanent management, they serve to prevent unhealthy booms, stabilize industry and social institutions, and sustain permanent communities.

## NATIONAL WELFARE DEMANDS BEST USE OF OUR LAND RESOURCES

Forest land is almost one third of the land area of the entire country, or some 600 million acres. Failure to develop and utilize this land productively means inevitable reduction in the aggregate of goods and services available to satisfy the wants of our people. The only valid excuse for not so utilizing it would be that there are other, more useful or more productive outlets for all of our available efforts and energies. This patently is not true, in view of the already large and constantly growing chronic unemployment of our workmen and our industrial plants.

States and Nation are necessarily concerned with maintaining abundance of natural resources, as a source of basic national wealth and as a means of giving opportunities for employment to their citizens. Assurance of continuous supply of the raw materials produced by our own forest lands is in itself a national necessity. Undue dependence on foreign imports for materials that we can produce at home is not good national economy. Forest products are an important item in our international trade. Even the most localized areas of idle or partially idle forest land are of national concern, because thereby the sum total of national wealth is reduced, and the opportunities for employment are diminished. National economic well-being and security cannot be assured so long as local impoverishment and decadence are common.



## FORESTRY THE BEST USE FOR LARGE AREAS OF LAND

During the pioneer period many scores of millions of acres of productive farms were carved out of forests. Originally, nearly all of the land east of the Great Plains was forested, and the pioneer farmer necessarily acquired a farm by destroying the forest. Thus the idea became firmly intrenched that all, or nearly all, forest land was suitable for agriculture after the forest was removed. As extensive lumbering operations spread in the Lake States and the South it was generally believed that agriculture would permanently utilize the cut-over lands. Land colonization became an accepted sequel to logging.

Experience rapidly demonstrated, however, that on millions of acres of forest land agriculture could not succeed. On large areas in the Lake States, in the South, and in the West, the idea that any kind of agriculture was feasible had to be given up.

Meanwhile, there has been widespread abandonment of agricultural lands which had been farmed for generations. The Northeast, the Piedmont Plateau, the southern Appalachians, and the Ohio Valley in particular have been the scene of widespread farm abandonment. Reduced fertility or usability caused by erosion has been a prime factor in removing millions of acres of hill farms from cropping. In those regions most of the cropped land was originally forested; much of it is likely to revert to forest.

The Bureau of Agricultural Economics (see section "Agricultural land available for forestry") estimates that the following areas have passed out of agricultural use since 1910, within those portions of the eastern United States that were once forested and are available for reforestation.

	<i>Acres</i>
Cleared land on abandoned farms.....	25, 000, 000
Idle crop land on farms not yet abandoned.....	10, 000, 000
Unused, nonwooded pasture land.....	15, 000, 000
Total.....	50, 000, 000

This does not include land which has come up to young timber and is now classified as forest. Furthermore, the bureau estimates that 30 million acres additional will cease to be used for crops or pasture between now and 1950. Partially offsetting this will be land that may be cleared for agricultural use. This is not likely to be a very large area. Agricultural economists state that—

If these economic and technical forces continue to act as they did during the decade 1920–30, it will not be necessary to increase appreciably the total area of agricultural land or of crop land to provide the increased agricultural products required by the expected increase in population.

Agriculture evidently cannot be expected to utilize, either for crops or for pasture, any large area of lands now in forest, so that in the future it must be a case of forests or nothing. Constructive treatment of the agricultural lands being abandoned and the lands now forested will have to be under the practices of forestry, whether the purpose is timber production, watershed protection, recreational use, wild-life production, or some combination of these.



## PUBLIC INTERESTS SHOULD DETERMINE EXTENT OF FORESTRY EFFORT

The justification for forestry does not depend finally on a meticulous calculation of the exact percentage at compound interest which each minor area of forest land can produce. Calculations of direct financial return may be acceptable in showing whether a private owner can retain his forest property. But the mere fact that a forest may offer little or no prospect of profit to the private owner should not be the deciding factor in planning its future use. The final determination, based upon a careful weighing of all the factors, including the public values involved, should rest with public, not private, agencies. The National Government, the State governments, and communities must consider as well the increased public income, the opportunities for self-supporting employment, the financial and social values of settled and permanent communities, the national advantages of home-grown forest products for domestic and export use, and the uncalculated but real values of forests in watershed protection, for recreational use, and in game production. The mere fact that forestry may not be justified for many private owners or the fact that they may think it is not, is not a point of much evidential value to the public agencies.

This statement, like any generalization on an economic question, cannot be taken to mean that the evidence shows or the Forest Service asserts the necessity for forestry on every acre of forest land, regardless of financial considerations. Such an assertion or reading of the evidence would be a manifest absurdity. But there is definite need for a very great and prompt increase in the acreage of forest land handled under the principles and practice of forestry.

## PUBLIC CAN AFFORD AN ADEQUATE FORESTRY PROGRAM

Public interest in forest problems has been increasing steadily during the past 40 or 50 years, and much progress has been made. The concrete and solid steps in forestry include the establishment of the original national forest system in the West through reservation of public lands; its extension to the East through purchase; establishment and expansion of State forests in many States; development of State, Federal, and private owners' cooperation in fire control effort; adoption of laws making a start toward regulation of private land treatment in many States; forestry practice on some private land; establishment of schools for training of foresters; and a great increase in research and other activities, which are building up a factual foundation for forestry practice.

All of these are good, but they are not enough. The tempo of forestry effort needs to be speeded up before it is too late. The 50 million acres which agriculture has already given up after trying to use it profitably; the 60 million acres of devastated forest land; the nearly 250 million acres of cordwood and ragged but partially stocked cut-over forest lands; the whole regions from which too rapid exploitation of the basic resource of timber has driven self-sustaining agriculture and community life; the generally unsatisfactory level of the essential activity of fire control; the wide-spread depreciation of watershed and recreational values of forest land; the continuing reduction in yield capacity of our forests; the unstable position of important forest industries; all of these call for a comprehensive



forestry program on a far greater scale than has been attempted hitherto.

Private owners generally will not, nor should they be expected to expend their money and efforts for purposes which will benefit them very little. It is logical and reasonable that the costs of such activities should be borne by the public which derives the benefit. These public benefits from forestry will be very large and widely ramified. The immediate costs to the public will also be large, but in the long run the direct and indirect returns to the public will be far greater.

#### PUBLIC CANNOT AFFORD TO DELAY ACTION

The Nation cannot afford to wait longer for existing efforts and the fortuitous play of economic forces to solve the problem. Only conscious, deliberate, and planned forestry on a large scale can measurably meet the known needs. Accidental or unconscious or unplanned action may, as in the past, leave some forest values on large areas. This something is better than nothing, but is doing only one fourth to one third of the job.

The total effort to date has not solved the problem, and the depression clearly has already had the effect of slowing down the existing rate of both private and public efforts.

Usable forests simply cannot be produced in a short time. Many decades are required even on the most productive areas, and with the most intensive forestry. The forest resources of the year 1980 depend on what is done now.

The numerous questions of how much forestry is now being practiced and by whom, the place and value of different means to forestry, the abilities and responsibilities of the different agencies, the costs and returns from forestry, the areas that will and may not be needed, and the program required in a full-scale attack on the problem are all discussed in later sections of this report.

